

CLAIMS

WHAT IS CLAIMED IS:

- 5    1.    A ventilated seat for a vehicle, comprising:
  - a vehicle seat having a ventilated component selected from a seat cushion component and a seat backrest component, at least one of which provides a seat cushion and an air permeable trim surface at occupant contact areas of the seat;
  - 10      an insert that is open at its sides and located beneath the trim surface of the ventilated component, the insert including a spacer layer formed of an air permeable foam material;
  - 15      a fluid mover in fluid communication with the insert for moving air through the insert and the trim surface; and
  - a tubular structure for providing the fluid communication between the insert and the fluid mover.
2.    The ventilated seat of claim 1 wherein the insert further comprises an adhesive layer for adhering the insert to the seat cushion.
- 20    3.    The ventilated seat of claim 2 wherein the tubular structure is provided by a foam seat cushion and defines a passageway through the cushion.
4.    The ventilated seat of claim 3 wherein a deflector is disposed over the passageway defined by the tubular structure.
- 25    5.    The ventilated seat of claim 4 wherein a plurality of sub-passageways are formed in the foam seat cushion and extend away from the passageway of the foam seat cushion.
- 30    6.    The ventilated seat of claim 5 wherein the foam seat cushion, the tubular structure, the sub-passageways, and combinations thereof include an air impermeable lining or coating.

7. The ventilated seat of claim 6 wherein the fluid mover is a blower configured to pull air through the spacer layer.

8. The ventilated seat of claim 6 wherein the fluid mover is a blower configured  
5 to push air through the spacer layer.

9. The ventilated seat of claim 6 wherein the insert further comprising a heater  
layer.

10 10. The ventilated seat of claim 9 wherein the insert is a multi-layer laminate.

11. The ventilated seat of claim 10 wherein the ventilated component further comprises at least one temperature sensor.

15 12. The ventilated seat of claim 11, further comprising a control unit in signaling communication with the temperature sensor, the fluid mover, the heater layer or combinations thereof.

13. The ventilated seat of claim 12, wherein in the insert covers only a portion of  
20 the foam seat cushion.

14. A ventilated seat for a vehicle, comprising:

a multi-layer laminate insert that is open at its sides and located beneath a trim surface of a ventilated component, the insert including a spacer layer including  
25 an air permeable foam material and an adhesive layer for attaching the insert to a seat cushion;

a blower in fluid communication with the insert for moving air through the spacer layer and the trim surface;

30 a duct for providing the fluid communication between the insert and the blower, wherein the duct is at least partially provided by the seat cushion and defines a passageway through the cushion;

a deflector is disposed over the passageway defined by the duct; and

a plurality of sub-passageways that extend away from the passageway.

15. The ventilated seat of claim 13 wherein the plurality of sub-passageways extend away from the passageway of the foam seat cushion.

5 16. The ventilated seat of claim 14 wherein the foam seat cushion, the duct, the sub-passageways, and combinations thereof include an air impermeable lining or coating.

10 17. The ventilated seat of claim 15 wherein the fluid mover is a blower configured to pull air through the spacer layer.

18. The ventilated seat of claim 15 wherein the fluid mover is a blower configured to push air through the spacer layer.

15 19. The ventilated seat of claim 15 wherein the insert further comprising a heater layer.

20. The ventilated seat of claim 18, further comprising at least one temperature sensor.

20 21. The ventilated seat of claim 19, further comprising a control unit in signaling communication with the temperature sensor, the fluid mover, the heater layer or combinations thereof.

25 22. The ventilated seat of claim 20 wherein the duct is a flexible duct.

23. The ventilated seat of claim 22, wherein in the insert covers only a portion of the foam seat cushion.

30 24. A ventilated seat for a vehicle, comprising:  
a vehicle seat having a ventilated component selected from a seat cushion component and a seat backrest component, at least one of which provides a seat cushion and an air permeable trim surface at occupant contact areas of the seat;

an insert that is open at its sides and located beneath the trim surface of the ventilated component, the insert including a spacer layer formed of an air permeable foam material and an adhesive layer for attaching the insert to a seat cushion;

5 a blower in fluid communication with the insert for moving air through the spacer layer and the trim surface;

a duct for providing the fluid communication between the insert and the blower, wherein the duct is at least partially provided by the seat cushion and defines a passageway through the cushion;

10 a deflector is disposed over the passageway defined by the duct; and  
a plurality of sub-passageways that extend away from the passageway,

wherein the foam seat cushion, the duct, the sub-passageways, and combinations thereof include an air impermeable lining or coating.

25. The ventilated seat of claim 24, wherein in the insert covers only a portion of  
15 the foam seat cushion.

26. The ventilated seat of claim 25, further comprising at least one temperature sensor.

20 27. The ventilated seat of claim 26, further comprising a control unit in signaling communication with the temperature sensor, the fluid mover, the heater layer or combinations thereof.

25 28. A method for operating an automotive vehicle seating comfort system,  
comprising:

providing a seat insert that is open at its sides and located between a trim surface and a foam seat cushion of a ventilated component, wherein the insert comprises a spacer layer formed of an air permeable foam material ;

30 moving a fluid through the insert and the trim surface with the aide of a blower to heat, cool, ventilate, or a combination thereof the ventilated component, wherein the blower and the insert are fluidly connected via a duct;

controlling the temperature of the ventilated seat with at least one temperature sensor in signal communication with a control unit adapted to adjust the amount of heating, cooling, ventilating or combination thereof of the ventilated component.

5 29. The method of claim 28, wherein the moving step comprises moving the fluid through a duct that is at least partially provided by the foam seat cushion and that defines a passageway through the cushion.

10 30. The method of claim 29, wherein the moving step comprises moving the fluid through at least one sub-passageway that extend away from the passageway.

31. The method of claim 30, wherein the moving step comprises deflecting the fluid that has moved through the passageway to the at least one sub-passageway.

15 32. The method of claim 31, wherein the moving step comprises moving the fluid through a duct, passageway, sub-passageway, or a combination thereof with an air impermeable coating or lining.

20 33. The method of claim 32, wherein the providing step comprises attaching the insert to the foam seat cushion.

34. The method of claim 33, wherein the providing step comprises adhering the insert to the foam seat cushion.

25 35. The method of claim 34, wherein the providing step comprises locating the insert over only a portion of the seat cushion.

36. The method of claim 35, wherein the providing step wherein the trim surface is air permeable on at occupant contact areas of the ventilated component.

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37. The method of claim 36, wherein the insert comprises a heater layer.

38. The method of claim 37, wherein the controlling step comprises locating at least one temperature sensor between the trim surface and the insert.

39. The method of claim 38, wherein the controlling step comprises issuing 5 instructions from the control unit to provide cooling, ventilation, less heating or combinations thereof when the temperature sensor senses the ventilated component has reached or is at a temperature above a threshold temperature.

40. The method of claim 39, wherein the controlling step comprises issuing 10 instructions from the control unit to provide heating, less cooling, less ventilation or combinations thereof when the temperature sensor senses the ventilated component has reached or is at a temperature below a threshold temperature.

41. A method of providing comfort to a seat occupant, comprising:

15 moving a fluid with the aide of a blower through a multi-layer laminate insert comprising a spacer layer comprising an air permeable foam material and an adhesive layer, where the insert is located between an air permeable trim surface and a seat cushion, wherein the seat cushion may part of a backrest component, a seat cushion component, or a combination thereof; and

20 controlling the temperature of an occupant by issuing instruction from a control unit to provide cooling, ventilation, less heating or combinations thereof when a temperature sensor senses the occupant, the trim surface, the seat cushion, the insert, or combinations thereof have reached or is at a temperature above a first threshold temperature or to provide heating, less cooling, less ventilation or 25 combinations thereof when the temperature sensor senses the occupant, the trim surface, the seat cushion, the insert, or combinations thereof has reached or us at a temperature below a second threshold temperature.

42. The method of claim 41, wherein the moving step comprises moving the fluid 30 through a duct that is at least partially formed by the seat cushion to form a passageway.

43. The method of claim 42, wherein the moving step comprises deflecting the moving fluid upon exiting the passageway to at least one sub-passageway with the seat cushion.

5 44. The method of claim 43, wherein the passageway, the at least one sub-passageway, or combinations thereof are lined or coated to make them impermeable to air.

10 45. The method of claim 44, wherein the blower is configured to pull air through the insert.

46. The method of claim 44 wherein the blower is configured to push air through the insert.